

AMPHITRITE LOBOCEPHALA, A NEW SPECIES
(POLYCHAETA: TERESELLIDAE) FROM TAIWAN

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Abstract.—A new terebellid polychaete species is described from a sandflat on the west coast of Taiwan. *Amphitrite lobocephala*, new species, lives in U-shaped tubes and is gregarious. The new species is similar to *Amphitrite edwardsii* (Quatrefages). Both species have 17 thoracic setigers and three pairs of well developed branchiae. Uncini are present from uncinigerous segments 7–16. The new species differs markedly from *A. edwardsii* and other species of *Amphitrite* that have been recorded from Pacific and adjacent waters by the presence of lateral lobes on the peristomium. A key is provided to the species of *Amphitrite* from the western Pacific, East Indies, Red Sea, Mediterranean and northern Australia.

Studies on polychaete communities from the intertidal areas on the west coast of Taiwan have recently been conducted (Hsieh & Chang 1991). A new terebellid species is one of the dominant tube-dwellers on the sandflats. This species is described herein and compared with related species. The types are deposited in the Institute of Zoology, Academia Sinica, Taipei, Taiwan (ASIZIP); the Australian Museum, Sydney, Australia (AM) and the National Museum of Natural History, Smithsonian Institution, Washington, D.C., U.S.A (USNM).

Family Terebellidae

Genus *Amphitrite* Müller

Amphitrite lobocephala, new species

Figs. 1–5

Material examined.—Intertidal sandflat at Hsiang Shan (24°50'N, 120°54'E), Hsin Chu Hsien, northwest coast of Taiwan, 22 Aug 1990: holotype (ASIZIP7), complete, female, 144 setigers, 80 mm long, 3.3 mm maximum width. 10 paratypes: 3 females (ASIZIP8, ASIZIP15, ASIZIP17), complete, 124–130 setigers, 73–80 mm long, 2.7–2.8 mm wide; 2 males (ASIZIP9, ASIZIP13) complete, 131–166 setigers, 75 mm long,

3.3–3.4 mm wide; 3 males (ASIZIP10, ASIZIP11, ASIZIP12) incomplete, 28–49 setigers, 30–47 mm long, 2.8–3.0 mm wide; 2 sex indeterminable (ASIZIP14, ASIZIP16), incomplete, 24–71 setigers, 25–48 mm long, 3.3 mm wide. 27 Nov 1990: 4 paratypes (ASIZIP18), complete with tubes, 42–80 mm long, tubes 140–210 mm long. 16 Apr 1991: 2 paratypes (ASIZIP19), complete with tubes, 75–90 mm long, tubes 140–160 mm long. 1 Feb 1993: 2 paratypes (ASIZIP20), juveniles, 38–47 setigers. May 1990: 1 paratype (ASIZIP21), incomplete, about 2.5 mm wide. 29 Sep 1990: 3 paratypes (AM W 20887), 1 complete, 150 setigers, 23 mm long, 2.5 mm wide; 2 incomplete, 29–56 setigers, 25 mm long, 1.5–2.5 mm wide. 10 Aug 1991: 4 paratypes (AM W 20888), 90–105 setigers, 27–45 mm long, 2–3.5 mm wide. 1 Feb 1993: 9 paratypes (USNM168062), complete with tubes, tubes about 120–170 mm long.

Description.—Found in U-shaped tubes made of sand grains and shell debris. Tube length about twice that of an individual. One of two tube openings fringed. Live specimens with anterior dorsum pale green, ventral glandular pads red, edge of thoracic uncinigerous podia brownish in color; al-



Fig. 1. *Amphitrite lobocephala*, new species, paratype (ASIZIP9). a. dorsal view of anterior body. Part of buccal tentacles was removed to show peristomium and peristomial lateral lobes. Branchiae also were cut off from the bases to show the 2nd pair of lateral lobes. b. ventral view of anterior body. Arabic numerals 3, 4 indicating segments 3, 4.

cohol preserved material pale cream. Pro-
stomium with large anteriorly projecting
U-shaped upper lip and small tongue-like
lower lip. Anterior margin of peristomium
thickened and collar-shaped, from where
numerous filiform buccal tentacles arise (Fig.
1a). Peristomium (=segment 1) shorter than
segment 2 dorsally. Lateral lobes on seg-
ments 1 and 3. Peristomial lateral lobes on
segment 1 bluntly pointed, triangular, over-
lapping base of tentacles, margin of lobes
less glandular than rest of lobe. Lobes con-
nected mid-ventrally, forming V-shaped
glandular structure (Fig. 1b). Inner surface
of peristomial lateral lobes mottled and
crenulated. Lateral lobes on segment 3 rec-
tangular with thin glandular margins; dorso-
lateral margins convoluted and folded pos-
teriorly, whole lateral lobe inserted at slight
angle, terminating ventrally at margins of
ventral pads (Figs. 1b, 2a). Peristomial lobe

larger than lateral lobes of segment 3. Eye-
spots absent in holotype and large speci-
mens but present in juveniles, two or three
red eyespots distributed on outer anterior
regions of the peristomium.

Three pairs of branchiae on segments 2-
4 originating from mid-dorsal region of seg-
ments, those on segment 4 arising from
about line of notopodia (Figs. 1a, 2a). Bran-
chiae delicate, finely branched, main stem
wide but not thickened or ridged. Branchiae
with numerous, fine, multiple branches,
arising spirally around the main stem,
strongly arborescent (Fig. 3).

Thoracic setigers with well-developed,
white, oval, glandular structures around no-
topodial bases. Areas anterior and posterior
to neuropodia also glandular with addition-
al glandular areas present along dorsal-lat-
eral and lateral surface of anterior thoracic
setigers. Notopodia 17 pairs, from segment

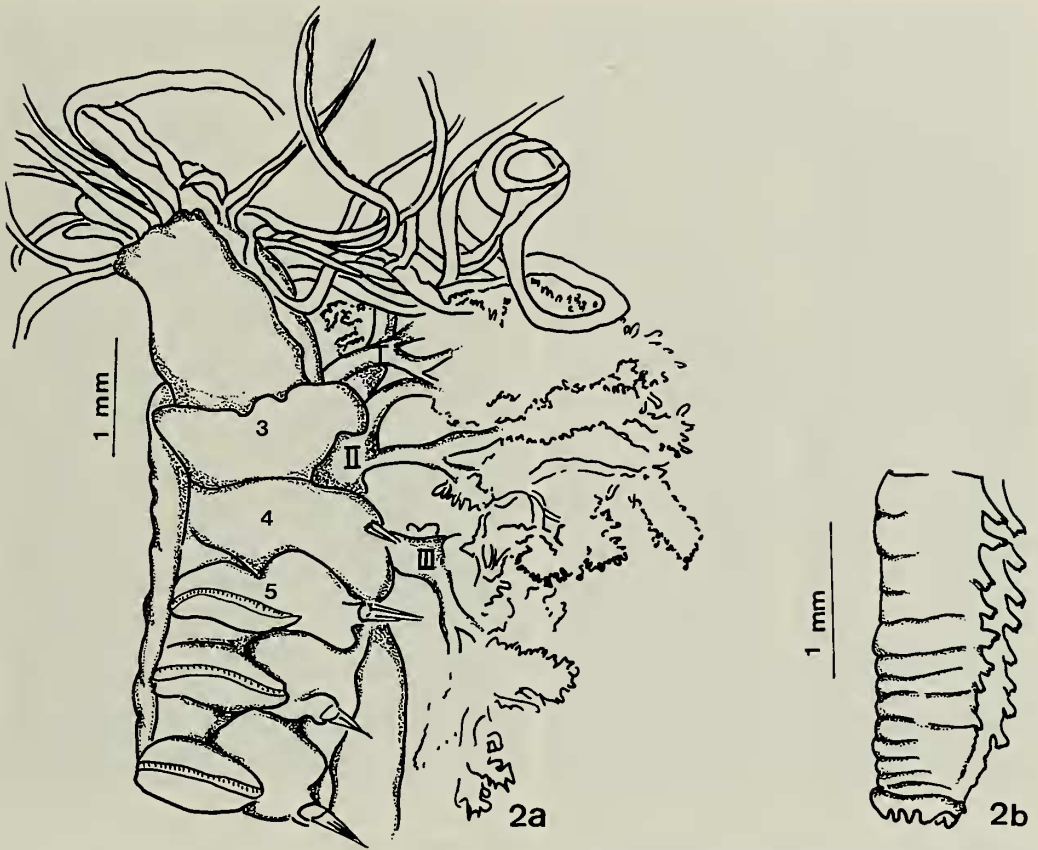


Fig. 2. *Amphitrite lobocephala*, new species, holotype. a. lateral view of anterior body. Arabic numerals 3, 4, 5 indicating segments 3, 4, 5. Roman numerals I, II, III indicating 3 pairs of branchiae. b. lateral view of posterior end.

4 and on following 16 segments. Notopodia rectangular, non-glandular structures. Notosetae within fascicle graded in length, limbate capillaries with very finely serrated tips (Figs. 4a, 5a-c). Thoracic uncini avicular with spur on posterior basal portion (Fig. 4b, c). Neuropodia present from setiger 2 (segment 5) continue to pygidium, initially uncini arranged in single rows, from uncinigerous segment 7 (segment 11) arranged in double rows back to back on remaining thoracic segments. Uncini of abdominal segments (from segment 21) arranged again in single rows. Neuropodia low ridges, transversely elongated on thoracic setigers (Figs. 1b, 2a), whereas those of abdominal setigers longitudinally elongated, paddle-like

with uncini inserted on margins (Fig. 2b). Dental formulae of thoracic uncini MF:1-2:1-2:1-4:1-2, and abdominal uncini MF:2:1:2-3:2-3.

Ventral pads forming an elongate V-shaped structure, anterior margins rounded, extending from segment 3 to end of thorax and then continuing as mid-ventral stripe along anterior abdomen (Fig. 1b). Pygidium terminal with margins convoluted (Fig. 2b).

Nephridial papillae small and rectangular, located just below and posterior to notopodia and above segmental boundary of segments 6-9. Papillae enlarged, oval-shaped in gravid individuals.

Variation.—The material examined



Fig. 3. *Amphitrite lobocephala*, new species, paratype (ASIZIP9). Posterior view of right branchia of the first pair.

shows the following variation: branchiae differ in size with the first pair often larger than the subsequent two pairs. Numbers of parapodia on each side of the body may vary within an individual. Unequal development occurs within thoracic segments where one notopodium may be missing from one side of the corresponding podia. Such development more often occurs in posterior abdominal segments where 4 or 5 neuropodia may be absent. Additionally, an abdominal neuropodium may split into two lobes. Red eyespots are present in young juveniles but are absent in larger individuals.

Remarks.—Eighteen species of *Amphitrite* have been previously recorded (see Hartman 1959, 1965; Day 1967; Hutchings & Glasby 1988). Among these species, ten were reported from regions of the western Pacific, East Indies, Red Sea, Mediterranean and northern Australia. They are *A. cirrata* Müller, 1771, *A. edwardsii* (Quatrefages 1865), *A. leptobranchia* Caullery, 1944, *A. malayensis* Caullery, 1944, *A. oculata* Hesse, 1917, *A. pachyderma* Hutchings & Glasby, 1988, *A. ramosissima* Marenzeller, 1884, *A. rubra* (Risso 1826), *A. scylla* (Savigny 1820), and *A. variabilis* (Risso 1826). The

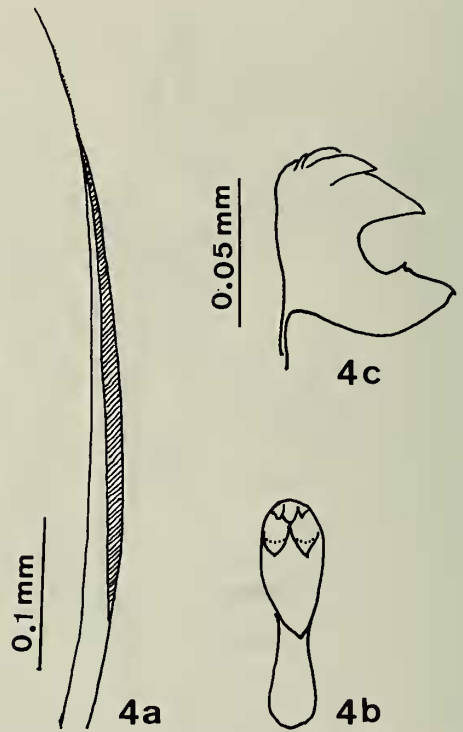


Fig. 4. *Amphitrite lobocephala*, new species. a. limbate capillary notoseta from setiger 7. b. uncini from setiger 7, frontal view. c. same as b, lateral view. a & c paratype ASIZIP12, b paratype ASIZIP8.

remaining eight species were recorded from arctic and antarctic regions. Thus, only the new species *A. lobocephala* and the above ten species are included for further discussion. In some of these species characters used for comparisons are based on the original description and also on subsequent re-descriptions including these of Okuda (1937) and Imajima & Hartman (1964) on *A. cirrata*, Imajima & Hartman (1964) on *A. edwardsii*, Hutchings & Glasby (1988) and Hutchings (1990) on *A. oculata*, Imajima & Hartman (1964) on *A. ramosissima*, Fauvel (1927), Okuda (1937) and Imajima & Hartman (1964) on *A. rubra* (Risso) and Fauvel (1927) on *A. variabilis*. As regards *A. rubra*, Hutchings & Glasby (1988) noted that all records of this species from Australia had been referred to either *A. pachyderma* or

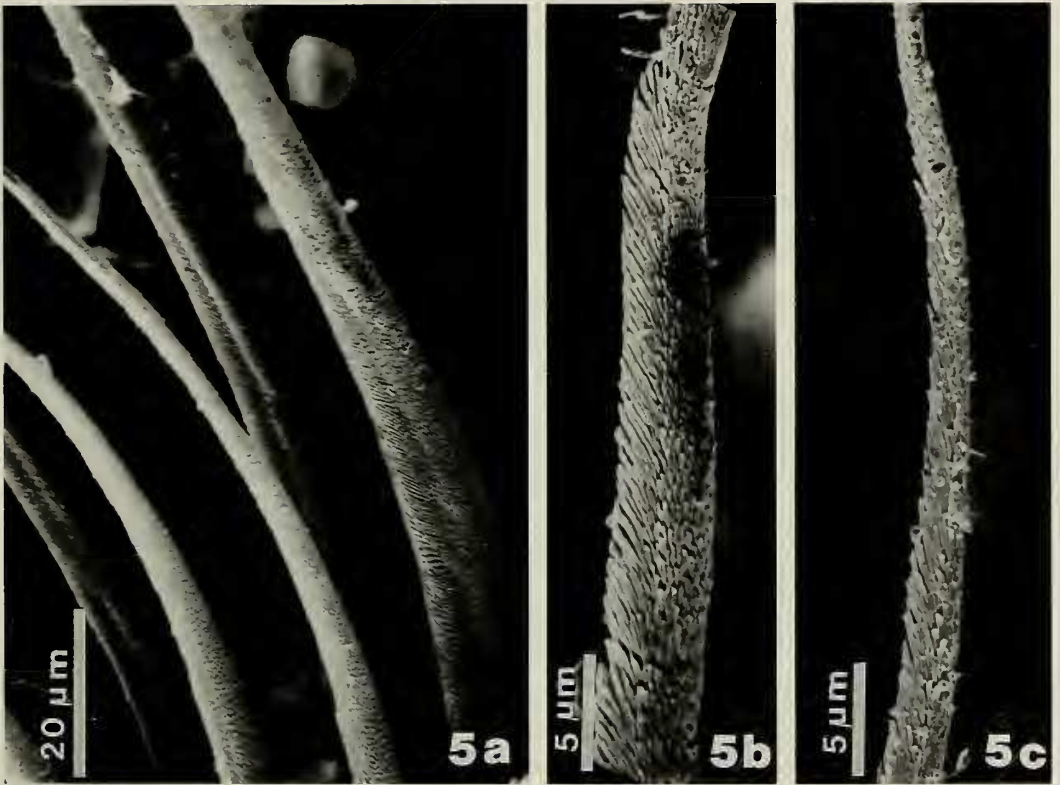


Fig. 5. *Amphitrite lobocephala*, new species. a. SEM (1570×) showing fine serration of limbate capillaries from setiger 5. b. SEM (4715×) showing serration at distal end of limbate capillary from setiger 5. c. SEM (4550×) showing hispid serration at the tip of limbate capillary from setiger 3. a–c paratype ASIZIP21.

Longicarpus. They also found that the type specimen of *A. rubra* was not a species of *Amphitrite*.

Amphitrite lobocephala has capillary notosetae with very fine serrated tips that may be characterized as faintly hispid using Kritzler's terminology in the classification of the genus (Kritzler 1984). *Amphitrite lobocephala* differs markedly from the other described species of *Amphitrite* in that the lateral lobes are first present on the peristomium (segment 1), rather than from segment 2. *Amphitrite lobocephala* resembles *Amphitrite edwardsii* in that both species have 17 thoracic setigers, three pairs of ramified branchiae that are well-developed, and uncini are present from uncinigerous segments 7–16. *Amphitrite lobocephala* differs

from *A. edwardsii* in the number and distribution of lateral lobes (on segments 1 and 3 vs. on segments 2, 3 and 4) and the number of pairs of nephridial papillae present (4 pairs vs. 9 pairs). In addition, *A. lobocephala* differs from the other species in such features as branchial morphology, number of thoracic setigers, arrangement of uncini, dentition of uncini, and the segments on which nephridial papillae occur. The following key reflects these differences.

Key to species of *Amphitrite* recorded in western Pacific, East Indies, Red Sea, Mediterranean and northern Australia

- 1a. Lateral lobes absent; 2 pairs of branchiae on segments 2 and 3
 *A. leptobranchia*

- 1b. Lateral lobes present, 1–3 pairs 2
- 2a. 1 pair of lateral lobes on segment 2; 19 thoracic setigers *A. scylla*
- 2b. 2 or 3 pairs of lateral lobes, various thoracic setigers 3
- 3a. Lateral lobes first present from peristomium (segment 1); a second pair on segment 3 *A. lobocephala*
- 3b. Lateral lobes first present from segment 2 4
- 4a. 2 pairs of lateral lobes on segments 2 and 3 5
- 4b. 3 pairs of lateral lobes on segments 2, 3 and 4 6
- 5a. Branchiae poorly branched with filaments arising directly from short stem *A. malayensis*
- 5b. Branchiae dendritically branched with short stem and very bushy tops *A. ramosissima*
- 6a. Branchiae filiform with short stem 7
- 6b. Branchiae dendritically branched 8
- 7a. Eyes absent; uncini in double rows from uncinigerous segments 7–16; nephridial papillae on segment 3 and segments 6–11 *A. cirrata*
- 7b. Eyes present; uncini in alternating rows from uncinigerous segments 7–19, arranged face to face; nephridial papillae on segment 3 and segments 5–8 *A. oculata*
- 8a. 17 thoracic setigers 9
- 8b. 20 or more thoracic setigers 10
- 9a. Lateral lobes well developed; uncini with 3 or 4 rows of teeth above main fang; nephridial papillae on segments 3–11 *A. edwardsii*
- 9b. Lateral lobes poorly developed; uncini with numerous rows of fine teeth above main fang; nephridial papillae on segments 3–8 *A. variabilis*
- 10a. 20–24 thoracic setigers; uncini in double rows from uncinigerous segments 7–19; 12–14 pairs of nephridial papillae on segments 3–15 *A. rubra*

- 10b. 24 thoracic setigers; uncini in alternating rows, face to face, from uncinigerous segments 7–40; 7 pairs of nephridial papillae on segments 3–9 *A. pachyderma*

Etymology.—The specific name, *lobocephala*, is derived from the Greek adjective, *lobos*, lobe and *cephala*, head referring to the first appearance of lateral lobes on the peristomium.

Habitat.—The type locality is a fine sand flat. The median grain size of the flat range from 0.17–0.18 mm in diameter with modal grain size ranging from 0.15–0.21 mm in diameter (Hsieh & Chang 1991). On the southwest side of the flat, the oyster *Crasostrea gigas* is cultured, supported above the sediment by bamboo sticks. Tubes of the terbellid *Amphitrite lobocephala*, the onuphid *Diopatra bilobata* Imajima and chaetopterids are the most obvious polychaete tubes seen on the flat.

Biology.—*Amphitrite lobocephala* is dioecious with a sex ratio of approximately 1:1. The species constructs sand tubes. Larger particulate materials, such as fragments of shells, are often incorporated onto the tubes. Sizes of particles in the tubes are generally larger than those in the surrounding area, suggesting that the worms select larger particles for tube construction (Hsieh & Chang 1991). The sizes of individuals in the benthic population range from about 10 segments to 150 segments. Largest oocytes are about 180 μm in diameter. Oocytes larger than 150 μm in diameter are present in the coelom from September to October and from March to May. Aulophore larvae (planktonic larvae with mucous tube, see Bhaud 1988) having one tentacle were found in the water column from late spring to summer (Hsieh, unpublished data).

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